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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

#13

In re Application of

Jorg Rheims

Serial No.: 09/863,594

Filed: May 23, 2001

Title: PROCESS AND A FLUFFER DEVICE FOR

TREATMENT OF A FIBER STOCK

SUSPENSION

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) Group: 1731

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) Examiner: Alvo, Marc S.

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LETTER

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Commissioner for Patents

Box AF

Washington, D.C. 20231

Sir:

Enclosed herewith, in triplicate, is the Brief of Appellant in the above-identified patent application. The \$320.00 fee is enclosed.

In the event Applicant has overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicant hereby conditionally petitions therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Respectfully submitted,

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CERTIFICATE OF MAILING

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TODD T. TAYLOR, Reg. No. 36,945

NAME OF REGISTERED REPRESENTATIVE

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March 24, 2003

DATE



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

#13/BM  
4-3-03  
(1 of 3)

In re Application of )  
Jorg Rheims ) Group: 1731  
Serial No.: 09/863,594 )  
Filed: May 23, 2001 ) Examiner: Alvo, Marc S.  
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SUSPENSION )

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**BRIEF OF APPELLANT**

Box AF  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

This appeal is taken from the decision of the Examiner, dated October 1, 2002, finally rejecting Claims 1-19, all of the claims that are under consideration in the above-captioned patent application; claims 20-32 having been withdrawn. Appellant timely filed a Notice of Appeal in this matter on January 24, 2003.

**I. REAL PARTY IN INTEREST**

The real party in interest in this appeal is Voith Paper Patent GmbH, a corporation organized and existing under the laws of the Federal Republic of Germany, which owns the entire interest in this patent application as set forth in the underlying claimed invention.

**II. RELATED APPEALS AND INTERFERENCES**

No related Appeals or Interferences are known to the Appellant.

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### **III. STATUS OF CLAIMS**

Pending: 1-32.

Canceled: None

Allowed: None

Objected To: None

Rejected: 1-19.

Withdrawn from Consideration: 20-32.

On Appeal: 1-19.

A clean copy of claims 1-19, all the claims under appeal, is included as an Appendix to this brief.

### **IV. STATUS OF AMENDMENTS**

No amendment was filed in this case subsequent to the final rejection. A request for reconsideration was filed but did not result in any change to the status of the claims.

### **V. SUMMARY OF INVENTION**

The present invention relates generally to processes and devices for the treatment of a fiber stock suspension intended specifically for paper and/or cardboard production. More specifically, the invention relates to a process for adding at least calcium carbonate to the fibers in the suspension.

With reference to the drawings of the application, Figs. 1 and 2 are schematic depictions of a fluffer 10, that is intended for the pretreatment of a fiber stock suspension, specifically in paper and/or cardboard production. The relevant treatment serves the addition of at least one additive, specifically a filler such as a calcium carbonate, on the moistened fiber surfaces of the fiber material (specification page 4, lines 14-17).

Fluffer 10 includes fluffer disks 12 which are equipped with one or more tooth patterns

and/or knives, forming a gap 14 in which the fiber material of the fiber stock suspension is divided in order to enlarge the specific surface of the fiber material, and thereby optimize accessibility to the educts of the fiber material. Knives may be provided alternatively or in addition to one or more tooth patterns (specification page 4, lines 19-23).

The fiber stock suspension is supplied to fluffer 10 through an inlet 16, and fluffer 10 also includes, preferably, a variably adjustable fiber stock suspension outlet 18. In the present example inlet 16 is positioned horizontally. In contrast, the fiber stock suspension, which is pre-treated in fluffer 10, is discharged vertically downward through outlet 18 (specification page 4, line 24 through page 5, line 5).

Operation of the process is described in the application, commencing on page 5, line 8 and continuing through page 6, line 18. As described therein, operating or working area 24 of fluffer 10 can be put under pressure. Preferably, the pressure is adjustable, between, for example, 0.1 to 20 bar.

The volume and mass flow rate of the fiber stock suspension are adjustable, for example, within a range of approximately 5 tons per day to approximately 1500 tons per day. The temperature of the fiber stock suspension that was pre-treated in fluffer 10 may, for example, be adjustable within a range of approximately 5° C to approximately 250° C.

An additive, for example PCC (precipitated calcium carbonate) or FLPCCTM (fiber loaded precipitated calcium carbonate), is added to the fiber stock suspension at an approximate ratio of 15% to 40%, and preferably at a ratio of approximately 20% to approximately 25%. The treatment of the fiber stock suspension may, for example, be conducted so that a pH-value of approximately 10 to approximately 13 is set prior to the reaction with the CO<sub>2</sub>. Specifically, CaCO<sub>3</sub> may be added prior to, in and/or after fluffer 10 to the fiber stock suspension. The temperature of the CaCO<sub>3</sub> may, for example, be approximately -10 ° C to approximately 250° C.

It is also possible to add Ca(OH)<sub>2</sub> (slaked lime) to the fiber stock suspension prior to, in

and/or after fluffer 10. The  $\text{Ca}(\text{OH})_2$  may be added specifically at a ratio of approximately 1% to approximately 60%. A lime particle surface larger than  $30,000 \text{ cm}^2/\text{g}$  is preferable.

The width of gap 14 between fluffer disks 12 is adjustable, for example, within a range of approximately 0.1 mm to approximately 100 mm. A pusher 26 may be provided for this purpose, which would be adjustable in the direction of double arrow F (see Fig. 2).

The energy requirement is preferably within an approximate range of 5 kWh/t to 200 kWh/t.

Fig. 3 is a schematic illustration of an example arrangement including at least one fluffer 10, intended specifically for a so-called "Fiber Loading<sup>TM</sup>" process. Each fluffer 10 may be designed in the manner illustrated with Figs. 1 and 2. Fluffer 10 may be located either prior to or after at least one reactor 28, 28'. One fluffer 10 is located between a refiner 30 and at least one reactor 28, 28'. Alternatively or additionally, it is also possible to position such fluffer 10 between at least one reactor 28, 28' and a tank 32. A refiner 34 is located again after tank 32, then leading into paper machine PM. Additionally or alternatively, at least one additive infeed 36 (shown schematically) can be provided, each of which is coupled with one of inlet 16 and fluffer 10 to supply a flow of at least one additive thereto. All other details in Fig. 3 are merely exemplary in nature.

## VI. ISSUES

1. Whether Claims 1-19 are unpatentable under 35 U.S.C. section 103(a) over the teachings of U.S. Patent 5,223,090 (Klungness, et al.) in view of U.S. Patent 5,810,973 (Carlsmith, et al.) and U.S. Patent 4,510,120 (Green, et al.).

2. Whether claims 1-19 are unpatentable under 35 USC 103(a) over the teachings of U.S. Patent 6,355,138 (Doelle) in view of Green, et al.

3. Inherent in each of the first two issues is whether it is proper to combine the process of Green, et al. with the processes disclosed in the primary references, Klungness, et al. and Doelle.

## **VII. GROUPING OF CLAIMS**

Appellant submits that Claims 1-19 stand or fall together.

## **VIII. ARGUMENT**

### **A. CLAIMS 1-19 ARE PATENTABLE UNDER 35 U.S.C. 103(a).**

In the final Office Action dated October 1, 2002, claims 1-19 were rejected under 35 USC 103(a) as being unpatentable over Klungness, et al. in view of Carlsmith, et al. and Green, et al. Claims 1-19 also were rejected under 35 USC 103(a) as being unpatentable over Doelle in view of Green, et al. Appellant submits that each rejection should be withdrawn.

#### **1. Claims 1-19 Are Patentable Under 35 U.S.C. 103(a) Over The Combination Of Klungness, et al In View of Carlsmith, et al and Green, et al.**

In a previous Office Action, a rejection was made on Klungness, et al. in view of Carlsmith, et al. In response to then applicant's now Appellant's arguments filed in response to the rejection, in the final Office Action the Examiner has now also included the teaching of Green, et al. to finally reject the claims. Appellant submits that that the combination of the primary reference, Klungness, et al., with Green, et al, is not a proper combination in that the process of Green, et al. is incompatible with the process of Klungness, et al. The combination suggested by the Examiner destroys the very essence of the Klungness, et al. process, for the reasons stated hereinafter. Therefore, one skilled in the art would not make the combination suggested by the Examiner, and Appellant submits that claims 1-19 are in condition for allowance.

**a. Teachings of the References, and Differences in the Invention Claimed**

**Klungness, et al.** - disclose the precipitation of calcium carbonate in cellulosic fibers containing about 40%-80% moisture, by mixing with the fibers from about 10% to about 40% of calcium oxide or calcium hydroxide. The process uses de-watered crumb pulp containing less moisture than the free moisture level (column 5, lines 47-49). Klungness et al. define quite clearly the type of pulp that is used, which is de-watered crumb pulp. In column 5, beginning at line 27, Klungness et al. define the "free moisture level" to be the "level of moisture for a particular pulp at which free water appears on the surface". Above the free moisture level, the pulp fibers become dispersed in the water, and slurry is formed. (Column 5, lines 39-41.) Klungness et al. particularly and specifically states that de-watered crumb pulp is utilized "which contains less moisture than the free moisture level". Therefore, it is clear that a slurry is not used in the teaching of Klungness et al. Klungness, et al. specifically and clearly states that it is not.

The use of a non-slurry is consistent with the teaching of the process of Klungness et al. In the paragraph beginning at column 6, line 8, Klungness et al. specifically state an intent to eliminate or minimize the presence of free surface moisture on the fibers, stating a desire that the moisture present be captive within the hollow fiber interiors. Restricting the presence of moisture to the interior of the fibers is fundamental to the process of Klungness, et al. Klungness et al. theorize that, in their process, hydrostatic forces draw calcium hydroxide into the cell walls and hollow interior of the cellulose fibers, during the exothermic reaction that occurs between the calcium oxide or calcium hydroxide and the water in the cells. The reaction occurs at the surface openings of the fiber, which is the site to which the

presence of water is restricted, since only minimal surface moisture is present in crumb pulp. The amount and location of water is restricted, by staying below the free moisture level of the pulp, so that calcium hydroxide is drawn into the cells. Carbon dioxide is added, with mixing, and calcium carbonate is then precipitated within the cellulosic fibers. Thus, fundamental to the process of Klungness et al. are the control of moisture in the pulp by minimizing surface moisture through the use of crumb pulp, and the subsequent use of direct precipitation of calcium carbonate in the cells.

In contrast to the teaching of Klungness et al., claim 1 of the present application recites treating a "fiber stock suspension," and adding "to the fiber suspension" at least calcium carbonate as one additive. This is in stark contrast to the process taught by Klungness et al., which specifically avoids the use of a fiber suspension through the unequivocal teaching that crumb pulp should be used, and adds no calcium carbonate during the process, instead adding calcium oxide or calcium hydroxide to the crumb pulp to create an exothermic reaction, with a subsequent precipitation of calcium carbonate in the crumb pulp as part of the process.

**Carlsmith et al.** - discloses an apparatus 10 (Figs. 1-3) for fluffing high consistency pulp and for promoting intimate contact between high consistency pulp and a gaseous bleaching reagent. An Apparatus 10 includes a housing 12 having a cover 13 and a pin rotor 14 rotatably mounted therein. During use, apparatus 10 is charged with a predetermined volume of high consistency pulp, and a gaseous bleaching agent enters housing 12 through a gas inlet port.



Carlsmith et al discloses nothing with respect to the process recited in the pending claims, wherein, a fiber suspension is processed in a fluffer with the addition of calcium carbonate to the suspension. Carlsmith, et al. teaches simply a fluffer for high consistency pulp to promote contact with a gaseous bleaching agent. Carlsmith, et al. discloses nothing with respect to the process recited in claim 1 wherein a fiber suspension is processed with the addition of calcium carbonate.

**Green, et al.** - The process disclosed by Green et al. teaches agitating a suspension of pulp with an insoluble filler, separating filler-containing pulp from residual filler, and vigorous washing the filled pulp until substantially all of the filler on the external surfaces of the fiber is removed. Green et al. teaches the use of existing filler particles, such as fine pigment grades of fillers, and treats the pulp with simple stirring or agitation.

Green, et al does not teach adding a moistened fiber material and calcium carbonate to a fluffer and separating the fiber material in the fluffer to increase a surface thereof and thereby optimize the accessibility of educts to the surfaces.

**b. The Combination of Klungness, et al With Green, et al Is Not Proper.**

The Examiner has conceded that the combination of Klungness, et al. in view of Carlsmith, et al. is not sufficient to reject the claims, as evidenced by the inclusion of Green, et al. in the rejection of the Final Office Action. However, Appellant submits that the combination put forth by the Examiner, that Green, et al. can be combined with Klungness, et al., is not proper.

MPEP 2143.01 states, in part, as follows:

**THE PROPOSED MODIFICATION CANNOT CHANGE  
THE PRINCIPLE OF OPERATION OF A REFERENCE**

**If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).**

The proposed modifications to Klungness, et al. by the combination therewith of the teachings of Green, et al. changes the principles of operation of Klungness, et al. Therefore, the present invention is not obvious from the teachings of Klungness, et al., Carlsmith, et al. or Green, et al. in any combination.

The proposed modification of Klungness, et al., as put forth by the Examiner, is to add calcium carbonate directly, rather than to initiate precipitation reactions as taught and required by Klungness, et al. The principal of operation in the process of Klungness, et al. relies upon the precipitation of  $\text{CaCO}_3$  using reactions between  $\text{CaOH}_2$  and/or  $\text{CaO}$  and  $\text{CO}_2$  or  $\text{CO}$ . The precipitation reaction is fundamental to the process disclosed in Klungness, et al. To substitute a direct addition of  $\text{CaCO}_3$  in the

process of Klungness et al. substantially alters the principal of operation of that process.

Klungness et al. teaches a process that combines calcium oxide or calcium hydroxide with dewatered crumb pulp. It is fundamental to the process of Klungness et al. that the material being treated is not a slurry, and that the process starts with calcium oxide or calcium hydroxide. As noted in column 5, lines 27-32, pulps used in the Klungness et al. process are characterized by an appearance of not being wet. While substantial moisture is present, the moisture is contained within the cell wall and the interior central cavity or lumen of the fiber. Calcium oxide reacts vigorously with water to produce calcium hydroxide. Since little or no surface moisture or free-moisture is present in the fiber mass, this reaction occurs with the water in the cell walls or lumen. During the first mixing step of Klungness et al., the crumb pulp is mixed with either calcium oxide or calcium hydroxide, and the calcium hydroxide is drawn into the cell walls and hollow interiors of the cell fibers (column 6, lines 8-37). Carbon dioxide is then added to cause precipitation of calcium carbonate directly in the cellulose fibers. It is fundamental to the process of Klungness et al. that the fibers first be loaded with calcium oxide or calcium hydroxide, and that the precipitation of calcium carbonate occurs by a reaction directly within the fibers. To incorporate the teachings of Green, et al., as suggested by the Examiner, would eliminate direct precipitation of calcium carbonate, which is the very essence of the Klungness, et al. process. Clearly one skilled in the art would not be inclined to make such a fundamental change in the process of Klungness, et al. It is entirely contrary to the teaching of Klungness, et al.

In fact, Klungness et al. addresses the teaching of Green et al. and suggests the method is not useful in that it requires the use of substantially more particulate filler than can be loaded within the lumens of the fiber (column 3, lines 3-19). Thus, vigorous washing is required, which Klungness et al. attempts to eliminate. Clearly, Klungness et al. teaches, and specifically instructs one skilled in the art not to look at the process of Green et al. Therefore, there is no teaching or suggestion to one skilled in the art that Klungness, et al. can be combined with Green, et al. In fact, the only teaching is just the opposite.

It is clear that the precipitation reaction in which calcium carbonate is formed is fundamental to the process of Klungness et al. Klungness et al. relies on first loading the cell fibers with one of the reactants so that the precipitation reaction occurs and calcium carbonate is formed in situ, directly within the cell walls or lumen. If, as suggested by the Examiner, calcium carbonate is substituted for the calcium oxide or calcium hydroxide in the Klungness et al. process, the in situ reaction and deposit of calcium carbonate does not occur. This is fundamentally contrary to the teaching of Klungness et al.

Green et al., on the other hand, teaches the use of existing filler particles such as fine pigment grades of filler. Clearly, Green et al. does not teach the precipitation of calcium carbonate in the presence of the fiber slurry. Since the process of Klungness et al. specifically requires and relies on performance of a calcium carbonate precipitation reaction the teaching of Green et al. is not properly combinable therewith, absent a clear unequivocal teaching thereof.

It is respectfully submitted that Klungness et al. relies on the precipitation reaction forming calcium carbonate as fundamental to the process disclosed therein.

Without first loading calcium oxide or calcium hydroxide into the fibers of Klungness et al., in situ precipitation of calcium carbonate is not possible, and in situ precipitation of calcium carbonate is precisely the effect that Klungness et al. desires to achieve. Thus, it is respectfully submitted that one skilled in the art would clearly not substitute calcium carbonate into the process of Klungness et al., since the process and goal of each Klungness et al. is destroyed by the elimination of the precipitation reaction forming calcium carbonate.

For these reasons, it is respectfully submitted that the combination of Green, et al with the teachings of Klungness, et al and Carlsmith, et al. in the final Office Action is not sound, and the rejection should be withdrawn and the claims allowed.

**2. Claims 1-19 Are Patentable Under 35 U.S.C. 103(a) Over The Combination Of Doelle In View of Green, et al.**

In a previous Office Action, a rejection was made on the teaching of Doelle alone. In response to then applicant's now Appellant's arguments filed in response to that rejection, in the final Office Action the Examiner has now also included the teaching of Green, et al. to finally reject the claims. Appellant submits that the present invention is not taught by the references, and Appellant further submits that the combination of Doelle with Green, et al, is not a proper combination in that the process of Green, et al. is incompatible with the process of Doelle. The combination suggested by the Examiner destroys the very essence of the Doelle process, for the reasons stated hereinafter. Therefore, one skilled in the art would not make the combination suggested by the Examiner, and Appellant submits that claims 1-19 are in condition for allowance.

**a. Teachings of the References, And Differences In the Invention Claimed**

**Doelle** - discloses a fiber loading apparatus 10 (Fig.1) that includes a reactor 12 and a reactant gas generator 14. The reactant gas generator generates a reactant gas that is injected into reactor 12 and is used in a chemical reaction to form calcium carbonate that is loaded into and on the fibers within the reactor. The reactor receives a fiber suspension concurrently with a reactant solid 30, used as a reactant in a chemical reaction to produce calcium carbonate as disclosed. Reactant 30 can be in the form of calcium oxide and/or calcium hydroxide used in the chemical reaction within reactor 12 (column 3, lines 15-28).

Doelle teaches a process in which calcium oxide or calcium hydroxide is mixed with a fiber suspension (column 3, lines 26-28). Carbon dioxide gas is added, and a precipitation reaction occurs in which the calcium hydroxide and carbon dioxide react to form calcium carbonate and water (column 3, lines 56-62). During the precipitation of calcium carbonate, the calcium carbonate is "effectively loaded into the lumen and grown as crystals on the fiber walls of a substantial portion of the fibers within the fiber suspension" (column 3, lines 53-56). By controlling process parameters such as pH, temperature, pressure, reaction time, lime slaking temperature, and lime average particle size different types of calcium carbonate crystals can be grown (column 3, line 63 through column 4, line 14). By using the process of Doelle rhombohedral, scalenohederal, aciculares, aragonite and substantially spherical shaped crystals can be formed (column 4, lines 15-20).

Doelle discloses a process similar to that of Klunngness, et al. in that pulp and reactants are combined to cause a precipitation reaction in the presence of the pulp.

Doelle does not teach the direct addition of calcium carbonate, as recited in claim 1. Thus, for the reason stated above with respect to Klungness, et al. it is respectfully submitted that Doelle does not teach the process recited in claim 1.

**Green, et al. -** The process disclosed by Green et al. teaches agitating a suspension of pulp with an insoluble filler, separating filler-containing pulp from residual filler, and vigorous washing the filled pulp until substantially all of the filler on the external surfaces of the fiber is removed. Green et al. teaches the use of existing filler particles, such as fine pigment grades of fillers, and treats the pulp with simple stirring or agitation.

Green, et al does not teach a process including adding a moistened fiber material and calcium carbonate to a fluffer, separating the fiber material in the fluffer to increase a specific surface thereof, and thereby optimize the accessibility of educts to the surfaces.

**b. Combining Green, et al. With Doelle Is Not Proper.**

Combining the teachings of Green, et al. with the teachings of Doelle is not proper and is technically inappropriate. MPEP 2143.01 states, in part, as follows:

**THE PROPOSED MODIFICATION CANNOT CHANGE  
THE PRINCIPLE OF OPERATION OF A REFERENCE**

**If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court**

reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

The proposed modifications to the teachings of Doelle by the combination therewith of Green, et al. changes the principles of operation of Doelle. Therefore, the present invention is not obvious from the teachings of Doelle or Green, et al. in any combination.

The proposed modification of Doelle is to add calcium carbonate directly, rather than to initiate precipitation reactions as taught and required by Doelle. The principal of operation in the process of Doelle relies upon the precipitation of  $\text{CaCO}_3$  using reactions between  $\text{CaOH}_2$  and/or  $\text{CaO}$  and  $\text{CO}_2$  or  $\text{CO}$ . The precipitation reaction is fundamental to the process disclosed in Doelle. To substitute a direct addition of  $\text{CaCO}_3$  in the process of Doelle substantially alters the principal of operation in that process.

Doelle teaches a process in which calcium oxide or calcium hydroxide is mixed with a fiber suspension. Carbon dioxide gas is added, and a precipitation reaction occurs in which the calcium hydroxide and carbon dioxide react to form calcium carbonate and water. During the precipitation of calcium carbonate, the calcium carbonate is "effectively loaded into the lumen and grown as crystals on the fiber walls of a substantial portion of the fibers within the fiber suspension" (column 3, lines 53-56). By controlling process parameters such as pH, temperature, pressure, reaction time, lime slaking temperature, and lime average particle size different types of calcium carbonate crystals can be grown (column 3, line 63 through column 4, line



14). By using the process of Doelle rhombohedral, scalenohedral, acicular, aragonite and substantially spherical shaped crystals can be formed (column 4, lines 15-20). The process by which different crystals can be grown, by controlling the parameters of the precipitation reaction are further discussed in Doelle. The precipitation of calcium carbonate is fundamental to the process of Doelle. Without that reaction, the process parameters to influence crystal growth are not available. Clearly one skilled in the art would not be inclined to eliminate the precipitation reaction in the Doelle process, to do so totally negates the purpose of the Doelle process, which is to control the type of crystal formed during the precipitation reaction.

It is clear that the precipitation reaction in which calcium carbonate is formed is fundamental to the process of Doelle.

To eliminate the reaction in which calcium carbonate is precipitated eliminates the potential to control crystal formation as taught by Doelle. Thus, substituting calcium carbonate for the calcium oxide or calcium hydroxide of Doelle eliminates specifically that reaction which Doelle desires to control. Without the precipitation reaction, and the controlled precipitation of calcium carbonate, crystal structure control is not possible. Substituting calcium carbonate in the process of Doelle is a fundamental change to the process of Doelle, eliminating the very purpose of Doelle.

Green et al., on the other hand, teaches the use of existing filler particles such as fine pigment grades of calcium carbonate, alumina, silica and zinc sulfide. Clearly, Green et al. does not teach the precipitation of calcium carbonate in the presence of the fiber slurry. Since the process of Doelle specifically requires and

relies on performance of a calcium carbonate precipitation reaction, the teaching of Green et al. is not properly combinable therewith, absent a clear unequivocal teaching thereof.

It is respectfully submitted that Doelle relies on the precipitation reaction forming calcium carbonate as fundamental to the process disclosed therein. Without precipitating calcium carbonate in the process of Doelle, it is not possible to control crystal formation in the manner taught by Doelle, and crystalline structure control is precisely the effect that Doelle desires to achieve. Thus, it is respectfully submitted that one skilled in the art would clearly not substitute calcium carbonate into the process of Doelle, since the process and goals of Doelle are destroyed by the elimination of the precipitation reaction forming calcium carbonate.

For these reasons, it is respectfully submitted that the combination of Green, et al with Doelle, as applied in the final Office Action, is not sound, and the rejection should be withdrawn and the claims allowed.

**B. RESPONSE TO EXAMINER'S ARGUMENTS.**

In the Final Rejection, the Examiner contends that an argument that Klungness, et al. teaches using dry pulp rather than a stock suspension is not convincing as the instant process teaches a fiber loading process as used by Klungness, et al. The Examiner refers to the specification of the application at page 1, lines 10-23 and at page 2, lines 5-6. Appellant responds that, in the first instance, Klungness, et al is referenced only as related art, on page one of the present application. In the second instance, on page 2 of the application, lines 5 and 6, the reference is to a "device which is optimally suitable for the aforementioned "Fiber Loading<sup>TM</sup>," process. There is no suggestion made by Appellant that the current claims to the process currently under appeal, or the claims to the device

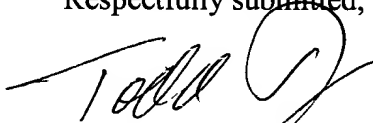
that stand withdrawn, are limited to the aforementioned "Fiber Loading<sup>TM</sup>" process. While the process claims that are the subject of this appeal, and the apparatus claims that stand withdrawn may be suitable for the process taught by Klungness, et al., each has a broader applicability and the current claims are directed to a process different from that taught by Klungness, et al for the reasons stated above. These differences are clearly stated in the claims.

In the Advisory Action dated December 18, 2002, the Examiner again contends that direct addition of calcium carbonate in a dry stage or in a re-slurried stage is taught by Green, et al. It is respectfully submitted that this does not address Appellant's arguments then or now. The direct addition of calcium carbonate cannot be properly incorporated into the processes taught by the other references, since the precipitation reaction forming calcium carbonate is a fundamental and necessary step in each of the processes in Klungness, et al and Doelle. In view of the very clear and unequivocal reliance of each Klungness, et al. and Doelle on the precipitation reaction, one skilled in the art would not then look to Green, et al., a reference that eliminates the precipitation reaction. In each Klungness, et al. and Doelle, the precipitation reaction is more than just an incidental step in the process. It is the fundamental basis for the process. It is the single step in each process that makes the process what it is. Eliminating that step, as suggested by the Examiner in applying the teaching of Green, et al. to the processes taught by either Klungness, et al. or Doelle completely destroys the process taught by Klungness, et al. or by Doelle.

## IX. CONCLUSION

For the foregoing reasons, Appellant submits that claims 1-19 are neither taught nor suggested by the cited references, alone or in combination, and claims 1-19 are therefore in condition for allowance in their present form. The present invention provides advantages over the prior art by supplying an efficient process that effectively loads calcium carbonate into the fibers. Accordingly, Appellant respectfully requests the Board to reverse the final rejections of the appealed claims.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box AF Commissioner for Patents, Washington, DC 20231, on: March 24, 2003.

Todd T. Taylor, Reg. No. 36,945

Name of Registered Representative



Signature

March 24, 2003

Date

## **X. APPENDIX**

1. (Amended) A process of treating a fiber stock suspension for at least one of paper and cardboard production, said process comprising the steps of:

providing the fiber stock suspension, with a moistened fiber material having fiber surfaces;

placing the fiber suspension in a fluffer;

adding at least one additive to the fiber suspension, at least one said additive being  $\text{CaCO}_3$ ; and

separating the fiber material within said fluffer so as to increase a specific surface thereof, thereby optimizing accessibility of educts to the fiber surfaces.

2. The process of claim 1, wherein one said additive is a filler incorporated onto the fiber surfaces during said operating step.

3. The process of claim 1, wherein said fluffer separates the fiber material into individual fibers.

4. The process of claim 1, wherein said fluffer is used for pre-treating the fiber stock suspension.

5. The process of claim 1, wherein said fluffer is comprised of at least one of knives and toothed fluffer disks.

6. The process of claim 1, wherein the fluffer has a working area which is pressurized.

7. The process of claim 6, wherein a pressure in said working area is within an approximate range of 0.1 to 20 bar.
8. The process of claim 1, wherein said process has a volume and mass flow rate associated therewith, said volume and mass flow rate being adjustable within an approximate range of 5 tons/day to 1500 tons/day.
9. The process of claim 1, wherein said fiber stock suspension within said fluffer has a stock temperature, the stock temperature being capable of being regulated within an approximate range of 5° C to 250° C.
10. The process of claim 1, wherein the at least one additive is added to the fiber stock suspension at an approximate ratio of 15% to 40%.
11. The process of claim 10, wherein the at least one additive is added to the fiber stock suspension at an approximate ratio of 20% to 25%.
12. The process of claim 1, wherein the fiber stock suspension has a stock pH associated therewith, said stock pH being set in an approximate range of 10 to 13.
13. (Amended) The process of claim 1, said  $\text{CaCO}_3$  being added to the fiber stock suspension at least one of prior to, in and after said fluffer.

14. The process of claim 13, wherein said  $\text{CaCO}_3$  has temperature selected to be in an approximate range of  $-10^\circ\text{C}$  to  $250^\circ\text{C}$ .

15. The process of claim 1, wherein one said additive is  $\text{Ca(OH)}_2$ , said  $\text{Ca(OH)}_2$  being added to the fiber stock suspension at least one of prior to, in and after said fluffer.

16. The process of claim 15, wherein said  $\text{Ca(OH)}_2$  is added at an approximate ratio of 1% to 60%.

17. The process of claim 15, wherein said  $\text{Ca(OH)}_2$  has a particle surface of greater than  $30,000\text{ cm}^2/\text{g}$ .

18. The process of claim 5, wherein said fluffer includes at least one pair of adjoining fluffer disks, each pair of adjoining fluffer disks defining a nip, each nip having a nip width, said nip width being adjustable within a range of about 0.1 mm to about 100 mm.

19. The process of claim 1, wherein said process has an energy requirement associated therewith, said energy requirement being selected from an approximate range of 5 kWh/t to 200kWh/t.